LIMITED WARRANTY

3-YEAR LIMITED WARRANTY ON NEW INSTRUMENTS: Instrumentation purchased new from Welch Allyn, Inc. (Welch Allyn) is warranted to be free from original defects in material and workmanship under normal use and service for a period of three years from the date of first shipment from Welch Allyn. This warranty shall be fulfilled by Welch Allyn or its authorized representative repairing or replacing at Welch Allyn's discretion, any such defect, free of charge for parts and labor.

Welch Allyn should be notified via telephone of any defective product and the item should be immediately returned, securely packaged and postage prepaid to Welch Allyn. Loss or damage in shipment shall be at purchaser's risk.

Welch Allyn will not be responsible for loss associated with the use of any Welch Allyn product that (1) has had the serial number defaced, (2) has been repaired by anyone other than an authorized Welch Allyn Service Representative, (3) has been altered, or (4) has been used in a manner other than in accordance with instructions.

1-YEAR LIMITED WARRANTY ON PROBES AND PROBE COVERS:
Welch Allyn warrants probe covers and probes to meet Welch Allyn's specifications for the Product at the time of purchase and to be free from original defects in material and workmanship under normal use and service for a period equal to 1 year from the date of first shipment of such Product to the customer by or on behalf of Distributor.

THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, OR OTHER WARRANTY OF QUALITY, WHETHER EXPRESSED OR IMPLIED. WELCH ALLYN WILL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Welch Allyn

(800) 854-2904 • (858) 621-6600 • FAX (858) 621-6610

Welch Allyn, Inc. San Diego, CA 92121

70873-0000D

Thermo Menu
Service Manual

Welch Allyn

SureTemp Thermometer

Model 678

Operating Instruction Manual

CE 0050

Thank you for purchasing the Welch Allyn Model 678 SureTemp® thermometer. The operating and maintenance instructions found in this manual should be followed to ensure years of accurate and reliable service. Please read these instructions thoroughly before using your 678 SureTemp® thermometer.

Technical service manuals may be ordered by contacting Welch Allyn Customer Service at (800) 854-2904.

The CE mark on this product indicates it has been tested to and conforms with the provisions noted within the 93/42/EEC Medical Device Directive.

European Regulatory Manager, Medical Division
Welch Allyn Ltd., Navan, Co. Meath
Republic of Ireland

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U.S. patent 5,632,555. Additional U.S. and foreign patents pending.

SPECIFICATIONS

- Patient Temperature Range: 84.0°F - 108.0°F (28.9°C - 42.2°C).
- Calibration Accuracy: ±0.2°F (±0.1°C).
- Dimensions (approximate): 2.25 in x 3 in x 7 in (5.72cm x 7.62cm x 17.78cm); weight 10.5 oz (300 gr).

CUSTOMER SERVICE

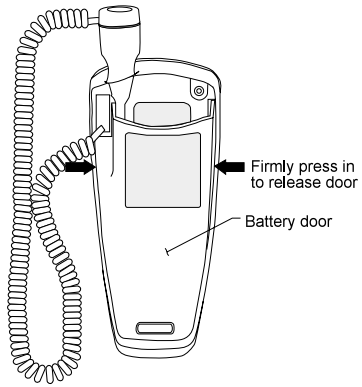
For customer service, technical or clinical support, please contact Welch Allyn at (800) 854-2904 from 7:00 AM to 5:00 PM Pacific Time.

MAINTENANCE

Other than using a new probe cover for each temperature reading, keeping the instrument clean, and replacing the batteries, there is no requirement for user maintenance. Refer to the 678 SureTemp Technical Service Manual for detailed information on security settings, sterilization, and calibration verification.

Battery Replacement

1. With thumb and forefinger, firmly press-in on indentations located on the sides of the rear housing. This will release two snaps.
2. Remove the battery door.
3. Remove batteries by lifting the battery strap. **IMPORTANT:** After removing the old batteries press and hold the **MODE** button for 5 seconds before inserting the new batteries.
4. Replace batteries with 3 AA Alkaline only. Orient per markings on the inside of the battery well.



5. Replace the battery door by inserting two tabs into bottom of thermometer and snapping back into place.

CLEANING & STERILIZATION

The 678 SureTemp housings may be cleaned with a cloth dampened with alcohol, warm water, or a nonstaining disinfectant such as Sporicidin® Spray and Towelettes or MetriSpray™. Care should be taken not to scratch the LCD faceplate. Low temperature Ethylene Oxide (ETO) sterilization of Oral or Rectal probes is to be used only when absolutely necessary. The procedure for ETO sterilization is described in the 678 SureTemp Technical Service Manual and is available from Customer Service.

Sporicidin is a registered trademark of Sporicidin International (800) 424-3733. MetriSpray is a trademark of Metrex Research Corporation (800) 841-1428.

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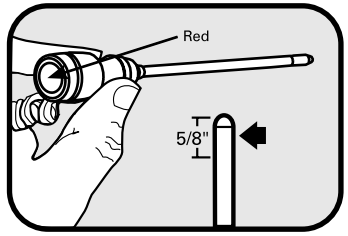
TAKING RECTAL TEMPERATURES - RED CAPPED PROBE

1. Exchange the oral probe (blue ejection button) for the rectal probe (red ejection button) by removing the probe from the storage channel, unplugging the probe connector from the thermometer, and repeating steps 1 through 6 in the SETUP section.

2. Attach a probe cover in the same manner as in the oral procedure. Make sure the rEC is displayed.

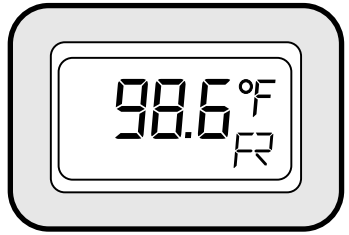
3. Separate the buttocks with one hand. Using the other hand, gently insert the probe only 1.5 cm (5/8 of an inch) inside the rectal sphincter (less for infants and children). The use of lubricant is optional.



WARNING: **Incorrect insertion can cause bowel perforation.**

Tilt the probe so the tip is touching tissue. Keep hand separating buttocks in place. Hold the probe in place during the entire temperature measurement process.

4. When the final temperature is reached, a tone will sound and the temperature will be displayed. Rectal temperature measurements will take about 15 seconds.



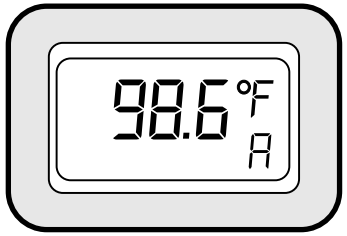
5. After the temperature measurement is complete, remove the probe from the patient, then eject the probe cover by firmly pressing the ejection button on the probe. (Figure 1).

6. Insert the probe into the storage channel to clear the display, in preparation for another temperature.

7. Wash hands (note: washing hands greatly reduces the risk of cross-contamination and NSI).

7. Place the arm snugly at the patient's side. Hold the arm in this position without movement of the arm or probe during the measurement cycle**.** *Movement of the arm or probe during this time will activate the probe position icon and may cause inaccurate readings*.

9. An audible tone and display of a temperature reading indicates the final temperature has been reached.



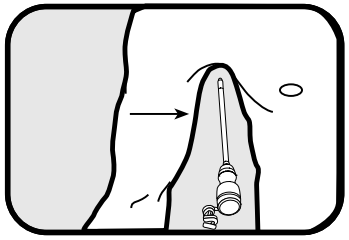
10. After the temperature measurement is complete, remove the probe from the patient's axilla, then eject the probe cover by firmly pressing the ejection button on the probe (Figure 1).

11. Insert the probe into the storage channel to clear the display, in preparation for taking another temperature.

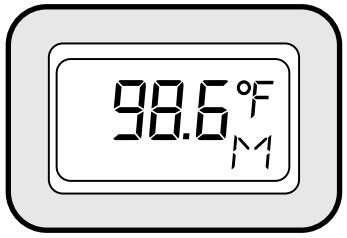
TAKING AXILLARY TEMPERATURES - BLUE CAPPED PROBE (PATIENTS OVER 4 YEARS THROUGH ADULT)

Axillary temperatures for patients 4 years and older should only be taken when the SureTemp is in the Monitor mode using an oral probe.

1. Withdraw the oral probe from its storage channel and observe a quick thermometer display test.
2. Attach a probe cover in the manner as described in step 2 of the OPERATION Section.



3. Place the probe in the axilla and place arm snugly at the patient's side to reduce the cooling effects of evaporation and convection.
4. After the temperature is displayed, depress the Mode button for more than 2 seconds. The "M" icon will appear on the LCD indicating the unit is in Monitor mode. Continue taking the temperature reading for about 5 minutes.



5. After the Monitor mode temperature has been taken, insert the probe into the storage channel to clear the display and reset the thermometer to Normal mode in preparation for another temperature.

INTRODUCTION

The Welch Allyn 678 SureTemp is a portable thermistor thermometer to be used for measuring patient temperatures ranging from 84°F to 108°F (28.9°C to 42.2°C). Oral/axillary and rectal probes utilize single-use disposable probe covers which limit cross-contamination. Oral, axillary and rectal temperatures can be taken using Normal or Monitor operating modes. Axillary temperatures taken using the **Normal** operating mode will display temperatures in about 10 seconds for patients under 4 years. Axillary temperatures for patients 4 years through adult are taken using the **Monitor** operating mode and will display temperatures in about 5 minutes. In the **Normal** mode, the thermometer's microprocessor "predicts" body temperature in about 4 seconds for oral temperatures and in about 15 seconds for rectal temperatures. The **Monitor** mode continuously displays the temperature of the probe which will reflect the patient's actual oral or rectal temperature in about 3 minutes and will continue for as long as the probe remains in place.

SAFETY & WARNINGS

⚠ DO NOT USE IN THE PRESENCE OF FLAMMABLE ANESTHETICS.

Caution: Federal (USA) law restricts this device to sale by or on the order of a physician.

In order to obtain accurate and reliable temperature-taking results and ensure patient safety, it is important that this booklet be read thoroughly prior to using the instrument. If you have any technical or clinical questions concerning the thermometer's use and/or care, please contact our Customer Service Department at (800) 854-2904.

- Single-use disposable probe covers, available from Welch Allyn, will limit patient cross-contamination. The use of any other probe cover or the failure to use a probe cover may produce temperature errors and will invalidate the instrument's warranty.
- Oral probes (blue ejection button) are to be used for taking oral and axillary temperatures only. Rectal probes (red ejection button) are to be used for taking rectal temperatures only. The use of the wrong probe will produce temperature errors.
- The thermometer case is not waterproof; do not drip fluids onto it.
- Do not use this instrument for any purpose other than that specified in this booklet. Doing so will invalidate the instrument's warranty.

- Do not use the thermometer if you notice any signs of damage to the probe or instrument. Contact our Customer Service Department for immediate assistance.
- Do not ETO sterilize without using proper procedures described in the 678 SureTemp technical manual.

This unit is equipped with two security alarm systems to reduce theft:

- Anti-Theft Temperature Counter System, and
- Instant Anti-Theft Audio Alarm System

"SEC" is displayed and audio tones are sounded when either alarm system is triggered. The unit is inoperable during this time. **The unit must be returned to its wall holder to reset either of these security alarm systems.** Refer to the "Changing The Security Setup" section of this manual to set the security feature.

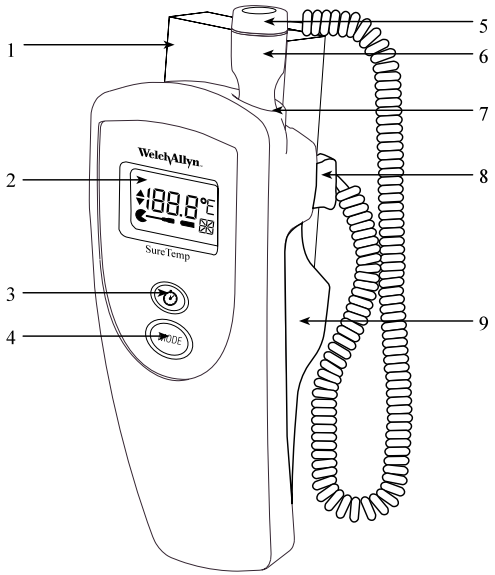


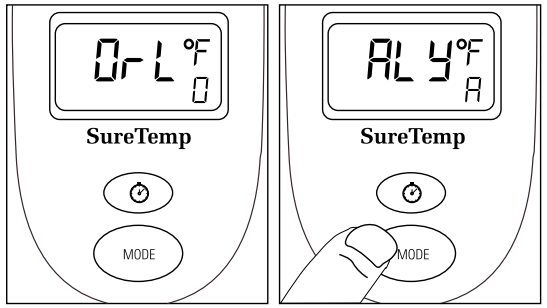
Figure 1

1. Probe cover box
2. Display
3. Pulse timer button
4. Mode button
5. Probe cover ejection button
6. Probe handle
7. Probe storage channel
8. Latching probe connector
9. Battery door

TAKING AXILLARY TEMPERATURES- BLUE CAPPED PROBE (PATIENTS UNDER 4YEARS)

Axillary temperature in children ages' birth through three years can be taken with the SureTemp in the Axillary Mode, with an oral probe.

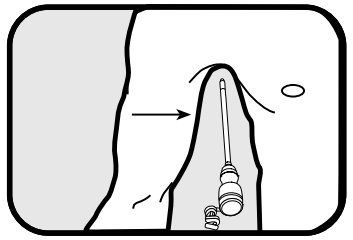
1. Withdraw the oral probe from its storage channel and observe a quick thermometer self-test on the display.
2. With OrL probe type displayed, depress and hold the Mode button for two seconds. ALy will now appear in the display, indicating that the thermometer is ready to take an axillary temperature measurement**.** ***Unless the thermometer is in the axillary mode, inaccurate axillary temperature readings will result.***



1. Remove Oral probe and wait for this display to appear.
2. Press Mode button for at least 2 seconds to change to Axillary mode.

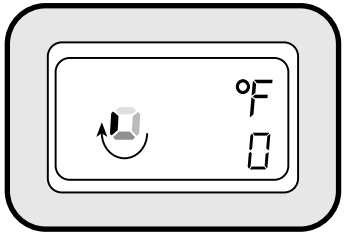
Note: The thermometer may be placed in the Axillary mode as the default mode using the Biotech mode, see the Technical Service Manual for further details. When the default mode is set to Axillary, you will not need to press the mode button.

3. Attach a probe cover as described in step 2 of the OPERATION Section.
4. Lift the patient's arm so that the entire axilla is easily visualized.
5. Place the probe as high as possible in the axilla. Do not allow the probe tip to come into contact with the patient until it is deliberately placed in the measurement site. *Any tissue contact before this time will activate the probe position icon and may cause inaccurate temperature readings.*

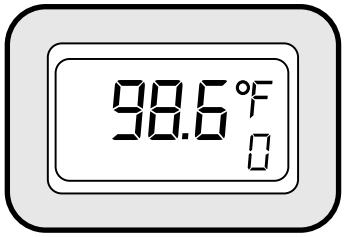


6. Be sure that the probe tip will be completely surrounded by axillary tissue. *Clothing or any other material touching the probe tip may cause inaccurate readings.*

3. During the temperature measurement cycle, "walking" segments will appear on the display indicating measurement is in process.



4. When the final temperature has been reached, a tone will sound and the patient's temperature will be displayed.



5. After the temperature measurement is complete, remove the probe from the patient, then eject the probe cover by firmly pressing the ejection button on the probe. (Figure 1)

6. Insert the probe into the storage channel to clear the display, in preparation for another temperature.

USING THE MONITOR MODE

Remove the probe from the storage channel and take a temperature using Oral, Rectal, or Axillary Mode. After the temperature is displayed, depress the Mode button for more than 2 seconds. The "M" icon will appear on the LCD indicating the unit is in Monitor mode. The unit is ready to continuously display temperatures in Monitor mode. After the Monitor mode temperature has been taken, replacing the probe in the storage channel clears the display and resets the thermometer to Normal mode. The unit will automatically enter the Monitor mode by removing the probe from the probe storage channel and waiting 60 seconds.

NOTE: When using the Monitor mode, allow the temperature readout to stabilize for 3 minutes for oral and rectal temperatures and 5 minutes for axillary temperatures.

WALL MOUNTING INSTRUCTIONS

The wall mount bracket should be mounted approximately 48 inches from the floor. This allows the end user of average height relatively easy access to the probe and probe covers. It should have at least 12 inches of clearance on the top of the unit so that the end user can easily remove the thermometer probe and load a probe cover without hindrance. Clearance of at least 4 inches from the bottom of the unit and from either side is also advisable to prevent tangling of the probe cord with other equipment at the bedside.

The wall mount bracket should be mounted in a location so that when a thermometer is installed, the display can be read from the patient's bedside. Placement should also ensure that the probe can be readily removed from the thermometer, a probe cover can be easily installed and the probe can be returned to its position without stress being placed on either the instrument, the wall mount or most importantly, the patient.

CHANGING THE SECURITY SETUP

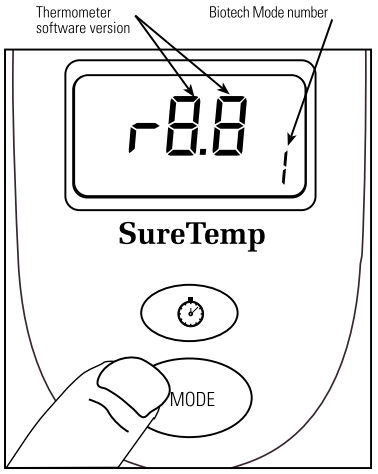
The SureTemp Model 678 is equipped with a security option that is designed to reduce the possibility of theft.

To change the security options, you must first enter the Biotech mode.

Entering the Biotech Mode

- Place the unit into the wall holder.
- Press and hold the mode button while removing the probe from the probe holder. You are now in the Biotech Mode.
- Remove the thermometer from the wall holder.

Note: Replacing the probe into the probe holder will place the thermometer back into its normal operating state.



Press Mode button while removing the probe from the probe storage channel.

Once in the Biotech Mode, there are several functions that can be accessed. These function are described completely in the Model 678 Technical Manual. The following section describes the security functions only.

Setting the Security Feature

In the Biotech Mode, you will need to step through the various Biotech functions until you reach the functions that apply to the security modes.

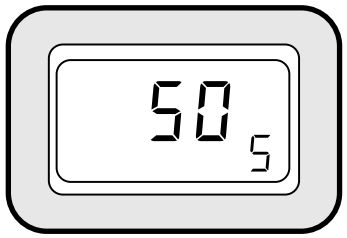
To step through the Biotech functions, press and hold the Mode button for approximately 2 seconds until the function number changes and a double beep is heard. The function number of the currently displayed function is displayed in the lower right hand corner of the display.

Once the Biotech function number has been changed, release the Mode button.

Once the desired function number is reached, press and immediately release the Mode button to toggle the settings within the function.

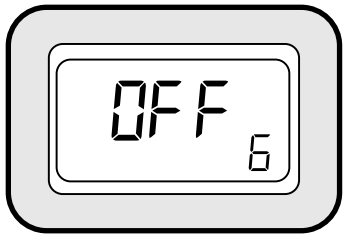
The security-related functions are as follows:

- **Function 5: Temperature Count Security Feature**



The displayed number indicates the number of temperatures that can be taken before the unit goes into security alarm mode and must be returned to the security wall holder. The counts are 0, 25, 50, 100 and 200 and appear sequentially. If the count is set to "0", the temperature count function is disabled or turned off and no security alarm will occur regardless of the number of temperatures taken. This function is independent of function 6 which is the instant-on security feature.

- **Function 6: Instant-On Security Feature**

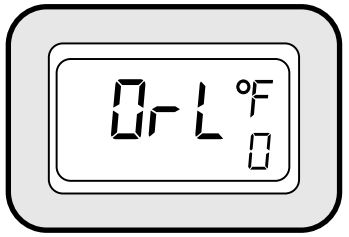


With this function set to ON, the thermometer immediately goes into security alarm when removed from the security wall holder. The options here are on and off. In the "OFF" setting, the unit will not alarm when removed from the wall holder.

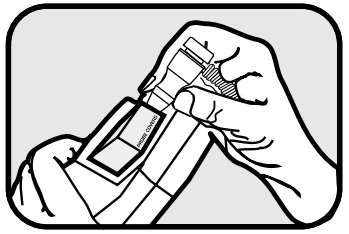
Once the security functions have been set to the desired state, replace the probe back into the probe holder to exit the Biotech mode.

OPERATION

1. Withdraw the probe from the storage channel and observe a thermometer display test followed by an audible tone and a display of the probe type OrL = Oral, ALy=Axillary, or rEC = Rectal.



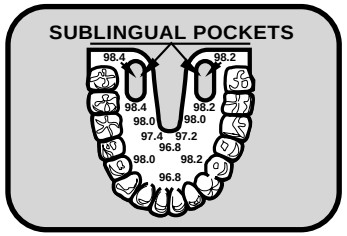
2. Load a probe cover onto the probe. Hold probe handle collar with thumb and forefinger, being careful not to hold or press the "ejection" button. Press the collar down firmly to secure the cover.



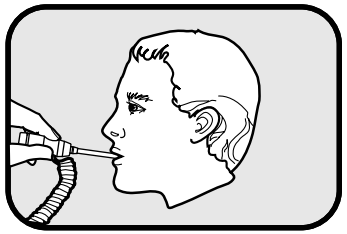
TAKING ORAL TEMPERATURES - BLUE CAPPED PROBE

The ability of the 678 SureTemp to take an accurate oral temperature in about 4 seconds requires correct user technique.

1. With OrL showing on the display, insert the probe tip gently into the patient's slightly opened mouth. Quickly slide the probe under the tongue on either side of the mouth to reach the sublingual pocket. Have the patient close his/her lips around the probe.



2. Hold the probe in place, keeping the tip in contact with tissue during the entire temperature measurement process. **Holding the probe still will ensure a fast and accurate measurement.**



▲ High Temperature: This icon is displayed if the patient's temperature is greater than 108.0°F (42.2°C).

▼ Low Temperature: This icon is displayed if the patient's temperature is less than 84.0°F (28.9°C).

▲A High Ambient Temperature: This icon is displayed if the ambient temperature is greater than 104°F (40°C).

▼A Low Ambient Temperature: This icon is displayed if the ambient temperature is less than 60.8°F (16.0°C).

▬ Low Battery: This icon flashes when batteries are low and will remain on when batteries are dead.

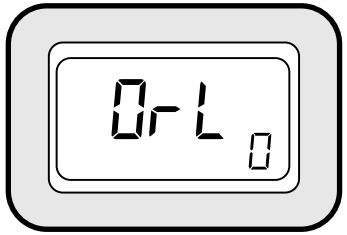
SEC Security Mode: Return the thermometer to the wall holder in order to resume normal operation.

Display Test: All segments of the thermometer display will appear briefly when the probe is removed from the storage channel to ensure proper function.

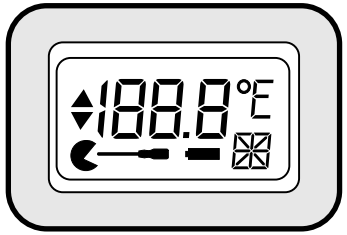
SETUP

1. Install the supplied Oral/Axillary probe or optional Rectal probe by inserting the latching plug on the end of the coiled cord into the plug receptacle on the unit. The plug snaps into place and cannot be removed without depressing the latch. (Figure 1).

   Note: The Oral probe is also used to take Axillary measurements.



2. Observe the LCD to see that the probe type OrL = Oral, ALy = Axillary, or rEC = Rectal is displayed.
3. Insert probe shaft completely into probe storage channel.
4. Remove the probe from the storage channel.
5. Observe the LCD to see that all display segments appear followed by the display of the probe type OrL = Oral , ALy = Axillary, or rEC = Rectal and temperature scale (°C or °F). Replace probe in storage channel.



6. Insert a box of disposable probe covers (part number 05031) into the probe cover storage well.

CHANGING PROBES

- Depress the latch and unplug the probe connector from the thermometer.
- Remove the probe from the storage channel.
- Repeat steps 1 through 6 in the SETUP section.

FEATURES

- Normal Mode: The thermometer takes oral temperatures in about 4 seconds and rectal temperatures in about 15 seconds. Axillary temperatures taken using the Normal operating mode will display temperatures in about 10 seconds for patients under 4 years. The unit will always operate in Normal mode unless the Mode button is depressed for more than 2 seconds after the initial temperature is displayed, which changes it to Monitor Mode. Replacing the probe in the storage channel automatically resets the unit to Normal mode.

- Monitor Mode: Monitor mode is generally used for long term (continuous) temperature monitoring, taking adult axillary temperatures, or when difficult situations prevent accurate temperatures from being taken in the Normal mode.
- Automatic backlight, for easier reading of temperature display in darkened rooms.
- Oral/Axillary Probe with 4' coiled cord and latching plug to prevent unintentional plug removal.
- Optional Rectal Probe with 4' coiled cord and latching plug.
- Mode Button: Recalls the last Normal mode temperature taken, converts temperatures from °F to °C, switches the unit to Monitor Mode and allows the clinician to change the measurement site from Oral to Axillary (or vice versa).
- Pulse Timer Button: Used to time pulse, respiration, IV drip rate or any other timed measurement. Audible beeps occur at 0, 15, 30, 45 and 60 seconds. It turns off automatically after a full 60 seconds. The timer may be stopped at any time by pressing the Pulse Timer or Mode button or by removing the probe from the probe storage channel.

ModeTable

Feature	Procedure
Toggle Between °C or °F Setting	Press and release Mode button any time a temperature is displayed
Monitor Mode	With the probe removed from the probe storage channel, press Mode button for **more than 2 seconds** after Normal temperature is displayed.
Temperature Recall	Press and release Mode button when the display is blank.
Pulse Timer	Press and release Timer button.
Axillary Temperatures	Remove Oral probe from storage well. After OrL is displayed, press Mode button for **more than 2 seconds, ALy will be displayed.**

DISPLAY INDICATORS

Instrument Malfunction: This icon is displayed if the unit is not functioning properly. Contact the Welch Allyn Customer Service Department.

Broken Probe: If displayed, probe may be damaged. Remove and reinstall probe. If error persists, then install a new probe.

Probe Position: Probe has broken contact with the tissue. Once proper contact has been achieved, the icon will be turned off but will reappear at the end of the temperature measurement. It is recommended that a new temperature be taken.

ALy or A Axillary Probe: This icon is displayed to show that the axillary mode has been selected.

OrL or O Oral Probe: This icon is displayed to show that the oral mode has been selected.

rEC or R Rectal Probe: This icon is displayed to show that the rectal mode has been selected.

Walking Segments: This will be displayed when the thermometer is in process of taking a temperature in the Normal mode.

M Monitor Mode: Monitor mode is generally used for long term temperature monitoring, taking axillary temperatures, or when difficult situations prevent accurate temperatures from being taken in the Normal mode.

P Pulse Timer: This icon is displayed when the pulse timer is in use.